Town of Hillsborough

Falls Lake Nutrient Sensitive Water Stormwater Management Program

ANNUAL REPORT

August 2021

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INTRODUCTION

Why Care About Stormwater?

North Carolina's number one water quality problem is stormwater runoff pollution. As stormwater flows across impervious surfaces, it picks up various pollutants, such as excess nutrients, oil and grease, bacteria and sediment. Polluted stormwater flows down storm drains and ditches where it is discharged, untreated, into local streams, rivers, and lakes. Stormwater runoff pollution causes adverse impacts to aquatic ecosystems, poses human health risks, and can greatly increase the cost of treating drinking water.

Program Background

The Falls of the Neuse Reservoir (Falls Lake) was completed in 1981. The lake was created to provide flood control, drinking water supply, protection of downstream water quality, fish and wildlife conservation, and recreation. Due to potential water quality concerns within the lake, the North Carolina Department of Environmental Quality (NCDEQ) conducted a water quality assessment and modeling program to assess the lake's condition. Based on this assessment, Falls Lake was listed as impaired for chlorophyll a on the draft NC 2008 303(d) list. As a result, NCDEQ, with the input of a large stakeholder group embarked on a rule making process to address the impairment.

The Falls Lake Rules (Rules) were adopted by the State of North Carolina in January 2011 to restore water quality in the lake by reducing the amount of pollution entering upstream. The Rules included a staged management strategy designed to reduce nutrient discharges to the lake from various sources, including stormwater runoff from new and existing development, wastewater treatment plants and agriculture.

The Town of Hillsborough began enforcing the Falls Lake nutrient loading limits for stormwater runoff from new development on February 28, 2011 through adoption of its Unified Development Ordinance (UDO). The Environmental Management Commission officially approved the Town's Falls Lake New Development program on January 12, 2012 contingent upon minor revisions to its UDO. The Town adopted those revisions to the UDO on June 11, 2012.

Development projects that were approved prior to adoption of the Falls Lake new development nutrient loading limits and have not yet been constructed will be treated as "existing development" pursuant to the Rules. Projects that were under review prior to the Rules adoption and approved soon after were given vested rights and are considered existing development.

As part of the Falls Lake New Development Rule, an annual report is required to be submitted to NCDEQ summarizing approved development and their corresponding nutrient loads. This report coincides with the Town's fiscal year which begins July 1st and ends on June 30th of each year. The report also includes a summary regarding engineered, structural stormwater control measures (SCMs) installed as required by the Rules.

1. Stormwater Program Information

1.1 Falls Lake Rules Program Administrator

Implementation and oversight of the Town of Hillsborough's Stormwater Program, including Falls Lake Rule implementation, is coordinated by:

Terry Hackett, Stormwater and Environmental Services Manager
Town of Hillsborough
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101 E. Orange Street
Hillsborough, NC 27278
Telephone: 919-296-9621
Email: terry.hackett@hillsboroughnc.gov

1.2 Staffing Changes

No staffing changes occurred this year.

1.3 Jurisdictional Map

A jurisdictional map is attached to the end of this report.

2. New Development Projects

2.1 Projects Approved

The Town of Hillsborough stormwater staff reviewed and approved stormwater management plans for two projects in the past year. Those projects are listed in Table 2-1.

Table 2-1. Projects Approved

Project Name	Project Number	Status
Leland Little Auction House Second Addition	SW2020-06	Under Construction
Waterstone Fire & EMS Station	SW2021-01	Construction Pending

Table 2-2 summarizes the type and acreage of the approved projects. Both projects were subject to the Rules and exceeded the nitrogen and phosphorus loading rates, requiring offset payments.

Table 2-2. Development Summary of Approved Projects

Development Type	Number	Site Acreage	Impervious Acreage	Impervious Acreage Exceeding Loading Rates
Commercial	1	3.47	0.69	0.69
Industrial	--	--	--	--
Institutional	1	2.00	0.87	0.87
Recreational	--	--	--	--
Residential	--	--	--	--
Total	*2*	*5.47*	*1.56*	*1.56*

Both projects required installation of SCMs and met the Rules onsite requirement. SCMs approved for these projects are summarized in Table 2-3. One of the SCMs approved for the Leland Little project represents the expansion of an existing stormwater wetland to treat additional impervious surface. Loading rates, onsite reductions and offset payments are summarized in the following section.

Table 2-3. SCMs Approved

SCM Type	Quantity
Bioretention	1
Filterra	2
Stormwater Wetland Expansion/Retrofit	1
Underground Storage	3

2.2 Loading Rates of Approved Projects

Nutrient loads from the approved projects are summarized in Table 2-4. For all projects subject to the Rules, nutrient loading estimates were calculated using SNAP v4.1, NCDEQ's approved nutrient loading accounting tool.

Table 2-4. Loading Rates and Onsite Reductions of Approved Projects

Nutrient Loading	Nitrogen		Phosphorus	
	lbs/yr	lbs/ac/yr	lbs/yr	lbs/ac/yr
Pre-development Load	6.6	1.2	2.84	0.52
Post-development Load – Untreated	25.1	4.6	4.40	0.80
Post-Development Load – Treated	16.4	3.0	2.97	0.54
Reductions from Onsite SCMs	8.7	1.6	1.43	0.26

As noted in the previous section, both projects required additional offsite reduction measures to meet required loading rates for both nitrogen and phosphorus. The

Leland Little project purchased nutrient credits through a private mitigation bank. Table 2-5 provides the total pounds purchased. The Waterstone Fire & EMS Station project will be required to purchase its offset prior to breaking ground.

Table 2-5. Offsite In-lieu Payment from Approved Projects

Nutrient	Lbs/yr	Total lbs[1]
Nitrogen	1.70	50.92
Phosphorus	0.63	18.86

[1]Total pounds required based on 30 years.

2.3 Projects Completed

Four projects previously approved pursuant to the Rules were completed in the past year. In order to meet required nutrient loading rates and peak flow requirements, 10 SCMs were installed for these projects. The SCMs are operational and have been inspected by stormwater staff. The projects completed and SCMs installed are listed in Table 2-6.

Table 2-6. Summary of Completed Projects

Project Name	Stormwater SCMs Installed
515 North Condominiums	3 Filterra, 2, underground storage
Elfin's Pond	1 wet pond
Harmony at Waterstone Townhomes	2 wet ponds
Healing Paws	2 bioretention cells

2.4 Greenfield Development and Redevelopment

Within the past three fiscal years, about 241 acres have been approved for development or redevelopment within the Town of Hillsborough's jurisdiction. Most of these projects have been completed while some are currently under construction. Once complete, this development will have resulted in about 95 acres of additional impervious surface. About 88 percent of this development has been greenfield development that is subject to the Rules. Redevelopment projects, in which buildings or parking were redeveloped and new impervious was constructed on the same site, accounted for about 8 percent. The remaining development (4 percent) is considered existing development under the Rules. Table 2-7 reports area by development type of greenfield, redevelopment, and existing development constructed within the last three fiscal years.

Table 2-7. Development Approved FY 18-19 through FY 20-21[1]

Development Type	Site Acreage[2]	New Impervious Acreage
Greenfield		
Commercial	27.4	11.1
Industrial	1.2	0.7
Institutional	66.5	13.2
Residential	117.4	61.9
Greenfield Total	212.5	86.9
Redevelopment[3]		
Commercial	15.4	2.0
Multi-Family Residential	1.7	0.8
Recreational	3.2	1.9
Redevelopment Total	20.2	4.7
Existing Development as Defined by the Rules[4]		
Commercial	5.3	2.8
Residential	3.3	1.0
Existing Development Total	8.6	3.8
All Development Total	241.3	95.4

[1]Completed or under construction

[2]Total site acreage including undisturbed forest.

[3]Redevelopment projects were defined as projects where existing buildings or parking lots are being redeveloped and some new impervious will be added. All projects that occurred in Hillsborough in the last three years added new impervious.

[4]Existing development summarized here does not include projects that were approved and began construction prior to FY18-19.

3. Operation and Maintenance Program

As indicated in Section 2.3, four projects within the Town's jurisdiction were constructed this year that were approved pursuant to the Falls Lake nutrient loading requirements. The as-built certification and operation/maintenance agreements were received. Subsequently, Town stormwater staff completed inspections of the onsite SCMs and accepted the SCMs into the operation and maintenance program. No enforcement actions were required.

With this most recent addition, a total of 51 SCMs pursuant to the Rules operate within the Town's jurisdiction, including 20 SCMs that were closed out within the last two fiscal years. Hillsborough requires annual maintenance inspection reports to be submitted by September 1 of each year. Reports for newly closed out SCMs are due one year following close out. In fiscal year (FY) 2020-2021, the Town received annual maintenance inspection reports for 27 of the 31 SCMs requiring a report (including Town owned and inspected facilities). In general, the missing reports were due to new SCM owners not understanding the requirements; these owners have been contacted and are on track for submitting the required FY 21-22 reports. In FY 21-22 to date, the Town has received 16 of the required reports.

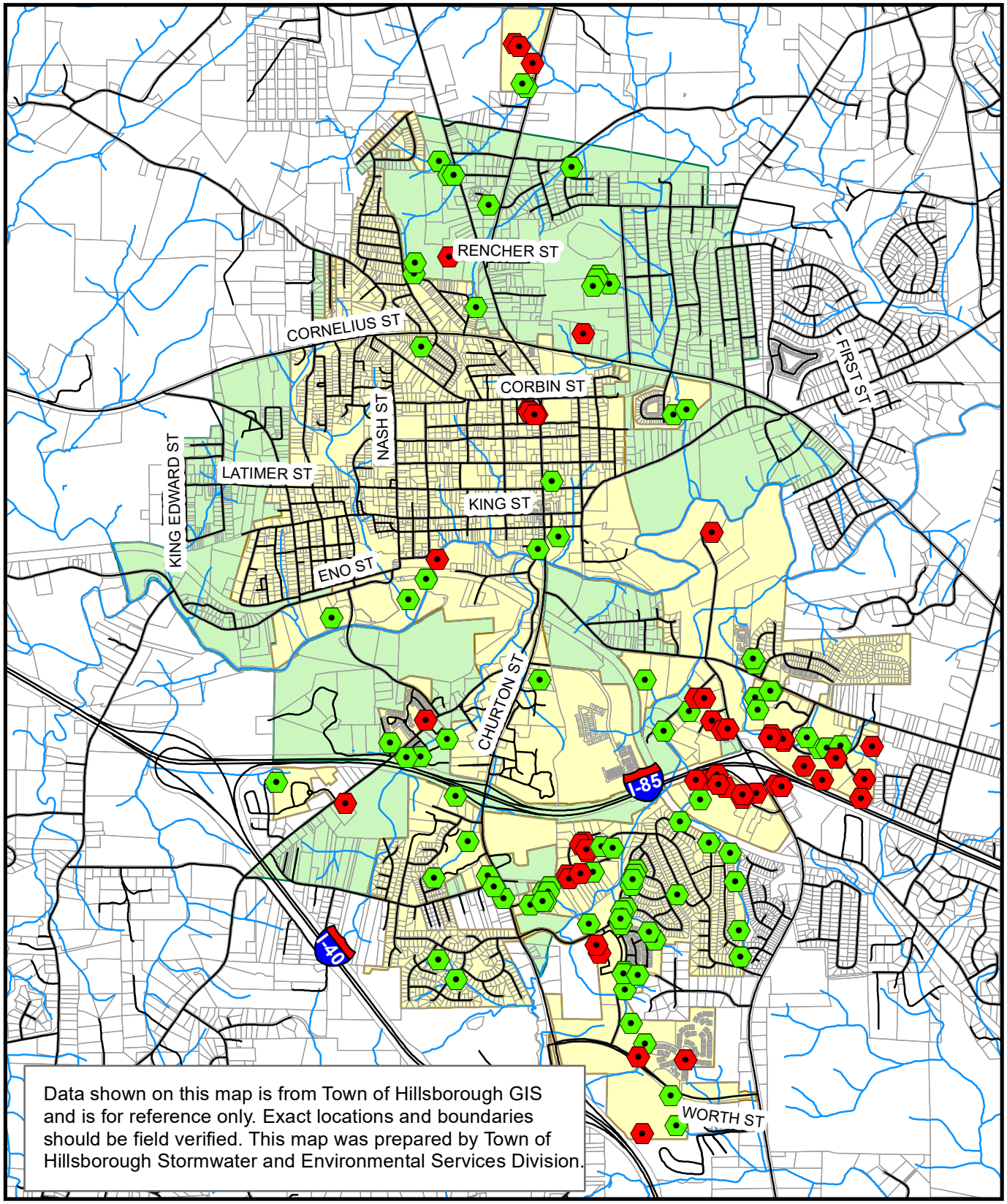
According to the annual inspection reports received in FY 20-21 for SCMs within the Town's jurisdiction, maintenance was needed on 15 SCMs. After the October 1 inspection report deadline, the town will be contacting the SCM owners that have not completed maintenance needs indicated on FY20-21 inspection reports, and if substantial progress is not achieved in 2-3 months, the town will follow-up with the owners and consider enforcement actions at that time. Table 3-1 summarizes inspections and corresponding actions for current and past fiscal years.

Table 3-1. Stormwater SCM Inspection Summary

Inspection Activity	FY 20-21	FY 21-22 (to date)
Total SCMs for which Inspection Reports Received (including SCMs approved prior to the Rules)	87	30
SCMs Approved Post-Rules for which Inspection Reports Received	27	16
Site SCM Inspections by Town Personnel	38	1
Reports indicating maintenance need	15	6
Maintenance Completed or Near Completion	8	0
Enforcement Actions	--	--

ATTACHMENT 1 Town of Hillsborough Jurisdictional Map

Stormwater Control Devices (SCMs) FY20-21



Data shown on this map is from Town of Hillsborough GIS and is for reference only. Exact locations and boundaries should be field verified. This map was prepared by Town of Hillsborough Stormwater and Environmental Services Division.

TOWN OF HILLSBOROUGH

Legend

- Legacy SCMs
- Falls Lake Approved SCMs
- Parcel
- Town Limits
- ETJ

0 0.25 0.5 1 Miles

N

Date 8/16/2021